ური ციროზით ავადმყოფებში სიმსუქნესთან და დაავადების დეკომპენსაციასთან კომბინაციაში.

გამოკვლეულია 104 პაციენტი ღვიძლის ალკოჰოლური ციროზით: 34-65 წლის ასაკის 16 ქალი და 88 მამაკაცი,მათგან 66 პაციენტი - ღვიძლის ალკოჰოლური ციროზით და სიმსუქნით (ჯგუფი I), 38 პაციენტი - ღვიძლის ალკოჰოლური ციროზით სიმსუქნის გარეშე (ჯგუფი II). ჩაილდ-პიუს კლასიფიკაციის მიხედვით, ღვიძლის ალკოჰოლური ციროზის A კლასი დიაგნოსტირდა 24 პაციენტში,B კლასი – 22 პაციენტში,C კლასი – 20 პაციენტში. საკონტროლო ჯგუფი წარმოდგენილი იყო 20 პრაქტიკულად ჯანმრთელი მოხალისით (4 ქალი, 16 მამაკაცი).

ფიბრინოლიზური და ანტიფიბრინოლიზური სისტემების სისხლში მოცირკულირე ბიომარკერების მაჩვენებლები განისაზღვრა იმუნოფერმენტული მეთოდით.

ორივე ჯგუფის პაციენტებში აღინიშნა პლაზმინოგენის ქსოვილოვანი აქტივატორის (t-PA), პლაზმინოგენის ტიპი 1-ის აქტივატორის ინჰიბიტორის (PAI-1) და პლაზმინ- α2-ანტიპლაზმინის (PAP) კომპლექსების მომატება, განსაკუთრებით – თანმხლები სიმსუქნის დროს. ეს ცვლილებები ღრმავდებოდა დაავადების გაუარესების შესაბამისად, ჩაილდ-პიუს კლასიფიკაციის მიხედვით. PAI-1-ის დონე მეტი იყო, ვიდრე t-PA-სი, რასაც თან ახლდა tPA/PAI-1 ინდექსის შემცირება I და II ჯგუფის პაციენტებში, საკონტროლო ჯგუფთან შედარებით.

tPA-ს, PAI-1-ის, D-დიმერების მომატება და tPA/PAI-1 ინდექსის შემცირება შესაძლოა წარმოადგენს თრომბოგენული რისკის პროგნოზულ ფაქტორს ღვიძლის ალკოჰოლური ციროზით დაავადებული პირებისათვის, განსაკუთრებით – კომორბიდული სიმსუქნის დროს.

ASSOCIATION OF CIRCULATING ADIPONECTIN, RESISTIN, IRISIN, NESFATIN-1, APELIN-12 AND OBESTATIN LEVELS WITH HYPERTENSION AND OBESITY

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Hypertension is one of the most common chronic diseases in humans, affecting more than 1 billion people worldwide. In the general population, the prevalence of hypertension is around 30-45%, but increases rapidly with advanced age [1]. Obesity increases the risk of metabolic diseases, such as hypertension, diabetes, and dyslipidemia, which lead to increases in cardiovascular morbidity and mortality [2,3].

Associations between body mass index (BMI) and arterial pressure are well established in different populations and across different age groups [4].

The attention of many scientists is riveted on studying of the mechanisms which are the cornerstone of pathogenesis of this comorbidity even today [5-8]. So, the discussion concerning a role of adipotcytokines in pathogenesis of hypertension and obesity continues [9-11].

Aim of the study is examine the association between circulating blood adipokine levels (adiponectin, resistin, irisin, nesfatin-1, apelin-12 and obestatin) and hypertension and obesity.

Material and methods. In the present study, 98 subjects, including 52 subjects with hypertension and 46 with hypertension and obesity, were enrolled. Subjects with hypertension were defined as males and females with systolic blood pressure (SBP) of ≥140 mmHg and/or diastolic blood pressure (DBP) of ≥90 mmHg. Hypertension was detected with history stratified by ESH17 criteria. The subjects were age-matched between the groups. BMI was calculated using the following standard formula: body weight (in kilograms)/height (in square meters). Obesity was diagnosed in BMI>30 kg/m^2. According to the Helsinki declaration all patients have been informed on performing clinical trial and have agreed to participation. Approved written informed consent was provided by all subjects before their participation in the study. The exclusion criteria were type 1 diabetes, acute coronary syndrome, acute and chronic inflammatory processes diffuse connective tissue diseases, cancer, concomitant thyroid disease, presence of symptomatic hypertension, psychiatric illness, alcoholism, drug addiction.

Resistin blood serum level was determined with commercial enzyme linked immunosorbent assay ELISA Kit (BioVendor, Germany); adiponectin blood serum level was determined with commercial enzyme linked immunosorbent Assay Max Human Adiponectin ELISA Kit (ASSYPRO, USA); apelin-12 blood serum level was determined with commercial enzyme linked immunosorbent assay Human Apelin 12 (AP12) ELISA Kit (China); obestatin blood serum level was determined with commercial enzyme linked immunosorbent assay Human Obestatin (OB) ELISA Kit (China); nesfatin-1 blood serum level was determined with commercial enzyme linked immunosorbent assay Human NES ELISA KIT (China); irisin blood serum level was determined with commercial enzyme linked immunosorbent assay Human IRISIN ELISA KIT (China), according to the instruction, and all these were performed with Automated EIA Analyzer «LabLine-90» (Austria).

Blood pressure was measured using an Dr.Frei A-20 sphygmomanometer. The average value of three blood pressure readings was recorded.

The data were processed statistically with IBM SPSS Statistics software: the mean arithmetic mean (M) and standard error of the mean (m) were calculated, for estimated probability and validity of the obtained data. A multivariable logistic regression analysis was performed to estimate odds ratios (Ors) adjusted for covariates to assess the predictive power of circulating blood adipokine levels for hypertension and obesity. Statistical assessments were two-sided and considered to be significant when p value was <0.05.

Results and discussion. Our study included 98 hypertensive subjects with or without obesity. All patients were matched for age, heart rate, SBP and DBP between the two groups as shown in Table 1.

The mean age of the hypertensive subjects was 54.18±12.23 years and that of the hypertensive subjects with obesity was 54.06±11.35 (p=0.33). The mean heart rate was 87.98±8.16 beats/min for hypertensive subjects and 89.67±9.43 beats/min for those obese subjects (p=0.28). The mean SBP of the hypertensive subjects was 164.65±12.39 mmHg and that of the hypertensive subjects with obesity was 168.23±14.67 mmHg (p=0.09). The mean DBP of the hypertensive subjects was 98.43±6.77 mmHg and that of the hypertensive subjects with obesity was 96.92±5.37 mmHg (p=0.68).

To examine the circulating levels of adipokines in patients, we first analysed the differences in their levels between the hypertension and obese hypertension groups. On conducting an analysis of the study population, the circulating level of resistin (19.32±0.53 ng/mL vs. 14.90±0.29 ng/mL, p=0.0024) was higher in obese subjects with hypertension than in those without obesity, whereas apelin-12 (1.51±0.09 ng/mL vs. 1.42±0.04 ng/mL, p=0.069) and obestatin (2.97±0.04 ng/mL vs. 3.06±0.04 ng/mL, p=0.073) levels were not different between the two groups. The circulating levels of adiponectin (6.83±0.10 ng/mL vs. 2.54±0.72 ng/mL, p=0.00038), irisin (1.91±0.06 ng/mL vs. 1.19±0.03 ng/mL, p=0.021) and nesfatin-1 (8.07±0.06 ng/mL vs. 6.95±0.04 ng/mL, p=0.0057) were higher in subjects with hypertension than in those with obesity (Table 2).

Multiple logistic regression analysis adjusted showed that subjects in the highest tertile of adiponectin [OR=4.19, 95% CI=(2.01–10.36), p-Value=0.00067] and nesfatin-1 were more likely to have hypertension OR=5.66, 95% CI=(2.46–11.43), p-Value=0.00033. (Table 3). Resistin, apelin-12, obestatin and irisin were not significant. Tertile values of resistin are expressed as T1 (<14.90 ng/mL), T2 (14.90–19.32 ng/mL), and T3 (>19.32 ng/mL). Tertile values for apelin-12 are expressed as T1 (<1.42 ng/mL), T2 (1.42 –1.51 ng/mL), and T3 (>1.51 ng/mL); for obestatin are T1 (<2.97 ng/ml), T2 (2.97–3.06 ng/ml), and T3 (>3.06 ng/ml); for adiponectin are T1 (<2.54 ng/ml), T2 (2.54–6.83 ng/ml), and T3 (>6.83 ng/ml); for irisin are T1 (<1.19 ng/ml), T2 (1.19–1.91 ng/ml), and T3 (>1.91 ng/ml) and for nesfatin-1 are T1 (<6.95 ng/ml), T2 (6.95–8.07 ng/ml), and T3 (>8.07 ng/ml).

Multiple logistic regression analysis adjusted showed that subjects in the highest tertile of resistin were more likely to have obesity OR=4.78, 95% CI=(1.92–8.80), p-Value=0.00019. (Table 4). Adiponectin, nesfatin-1, apelin-12, obestatin and irisin were not significant. Tertile values of resistin are expressed as T1 (<14.90 ng/mL), T2 (14.90–19.32 ng/mL), and T3 (>19.32 ng/mL). Tertile values for apelin-12 are expressed as T1 (<1.42 ng/mL), T2 (1.42 –1.51 ng/mL), and T3 (>1.51 ng/mL); for obestatin are T1 (<2.97 ng/ml), T2 (2.97–3.06 ng/ml), and T3 (>3.06 ng/ml); for adiponectin are T1 (<2.54 ng/ml), T2 (2.54–6.83 ng/ml), and T3 (>6.83 ng/ml); for irisin are T1 (<1.19 ng/ml), T2 (1.19–1.91 ng/ml), and T3 (>1.91 ng/ml) and for nesfatin-1 are T1 (<6.95 ng/ml), T2 (6.95–8.07 ng/ml), and T3 (>8.07 ng/ml).

Table 1. Characteristics of all subjects included in this study

Variables	Hypertension (n=52)	Hypertension and obesity (n=46)	*p* value
Age (years)	54.18±12.23	54.06±11.35	0.33
Heart rate (beats/min)	87.98±8.16	89.67±9.43	0.28
SBP (mmHg)	164.65±12.39	168.23±14.67	0.09
DBP (mmHg)	98.43±6.77	96.92±5.37	0.68

note – p<0.05 is statistically significant

Table 2. The circulating levels of adipokines in patients

Variables	Hypertension (n=52)	Hypertension and obesity (n=46)	*p* value
Resistin (ng/mL)	14.90±0.29	19.32±0.53	p=0.0024
Apelin-12 (ng/mL)	1.42±0.04	1.51±0.09	p=0.069
Obestatin (ng/mL)	3.06±0.04	2.97±0.04	p=0.073
Adiponectin (ng/mL)	6.83±0.10	2.54±0.72	p=0.00038
Irisin (ng/mL)	1.91±0.06	1.19±0.03	p=0.021
Nesfatin-1 (ng/mL)	8.07±0.06	6.95±0.04	p=0.0057

note – p<0.05 is statistically significant

Table 3. Multiple logistic regression for hypertension

Variables	OR (95% CI)					*p* value
	T1	T2	95% CI	T3	95% CI	
Resistin (ng/mL)	1	0.84	(0.47–1.50)	0.92	(0.51–1.64)	p=0.766
Apelin-12 (ng/mL)	1	0.67	(0.38–1.17)	0.78	(0.45–1.37)	p=0.321
Obestatin (ng/mL)	1	0.62	(0.35–1.11)	0.68	(0.38–1.21)	p=0.187
Adiponectin (ng/mL)	1	3.12	(1.11–7.64)	4.19	(2.01–10.36)	p=0.00067
Irisin (ng/mL)	1	1.57	(0.77–3.19)	1.85	(0.92–3.70)	p=0.083
Nesfatin-1 (ng/mL)	1	2.83	(1.31–6.15)	5.66	(2.46–11.43)	p=0.00033

note – p<0.05 is statistically significant.

Table 4. Multiple logistic regression for obesity

Variables	OR (95% CI)					*p* value
	T1	T2	95% CI	T3	95% CI	
Resistin (ng/mL)	1	2.44	(1.23–6.46)	4.78	(1.92–8.80)	p=0.00019
Apelin-12 (ng/mL)	1	1.83	(1.42–2.56)	0.95	(0.50–1.63)	p=0.456
Obestatin (ng/mL)	1	0.58	(0.24–1.29)	0.76	(0.44–1.39)	p=0.283
Adiponectin (ng/mL)	1	0.47	(0.29–1.35)	0.75	(0.42–1.46)	p=0.988
Irisin (ng/mL)	1	0.92	(0.14–1.41)	1.22	(0.89–1.81)	p=0.643
Nesfatin-1 (ng/mL)	1	0.80	(0.45–1.44)	1.21	(0.51–2.85)	p=0.664

note – p<0.05 is statistically significant.

In this study, we measured the expression of adiponectin, resistin, irisin, nesfatin-1, apelin-12 and obestatin in plasma in hypertensive subjects with and without obesity. The circulating level of resistin was increased in hypertensive subjects with obesity compared to those in subjects with normal body weight. The circulating levels of adiponectin, nesfatin-1 and irisin were increased in hypertensive subjects without obesity compared to those in obese subjects. Patients in the highest tertile of resistin were more likely to have obesity and subjects in the highest tertile of adiponectin and nesfatin-1 were more likely to have hypertension. Apelin-12 and obestatin levels in plasma did not differ according to the presence or absence of obesity.

So, resistin may play role in obesity development, whereas adiponectin and nesfatin-1 may play role in hypertension development. This may be explained by the development of endothelial dysfunction, changes in vascular tone, activation of renin–angiotensin system, inflammation, changes in carbohydrate and lipid metabolism under the influence of these hormones of adipose tissue. Endothelial dysfunction is an important feature predisposing to vascular disease and is closely associated with obesitylinked complications including hypertension and insulin resistance [12]. Numerous studies have shown that adiponectin is beneficial for endothelial function. Plasma adiponectin level is closely correlated with the vasodilator response to reactive hyperemia in hypertensive patients [13]. Adiponectin also plays a role in the regulation of vascular tone by hyperpolarizing neurons with receptors for oxytocin and inducing mixed responses of hyperpolarization-depolarization in neurons with receptors for vasopressin in the paraventricular nucleus of the hypothalamus [14]. In turn, resistin enhances phosphorylation in muscles and liver and reduces the level of the 3-signal cytokine suppressor, which confirms its important role in the development of insulin resistance in obesity [15]. Resistin inhibits lipogenesis, while its decrease leads to an increase in body fat stores and an increase in insulin sensitivity. Resistin hypothalamic nuclei processing causes insulin resistance liver cells and expression of inflammatory markers in the hypothalamus [16]. Until now, it is not clear whether central nervous nesfatin-1 activates cardiac sympathetic innervation, but it was shown that it increases renal sympathetic nerve activity, known to be involved in blood pressure regulation through the renin–angiotensin system [17].

In agreement with our study, Amal et al. [18] in Egyptian population reported that resistin levels were measured respectively as controls (1.33±0.27 ng/mL) and obese patients (2.43±1.5 ng/mL). In India, Kumar et al. [19] found a significant difference in serum resistin levels between 305 women with metabolic syndrome (14.63±11.02 ng/mL) and 310 women without metabolic syndrome (9.61±6.28 ng/mL).

But, controversial results was found also by Yamunah D.A. et al. [20] in 469 non□obese and 162 obese Malaysian subjects (P=.729). Contrarily, Han et al. [21] he did not observe significant differences in serum resistin levels between the metabolic syndrome and non metabolic syndrome groups.

A number of clinical studies have demonstrated the relationship of plasma adiponectin concentration with hypertension [22-25]. Adamczak et al. showed for the first time that plasma adiponectin levels are significantly lower in patients with essential hypertension compared with those in body mass index-matched normotensive subjects [26]. An inverse correlation is observed between adiponectin concentration and mean systolic and diastolic blood pressure. Similarly, adiponectin levels are negatively associated with blood pressure in patients with type 2 diabetes and metabolic syndrome [27]. In addition, Iwashima et al. have demonstrated that a hypoadiponectinemia is a risk factor for hypertension independent of insulin resistance and diabetes [28].

It was established, that the highest nesfatin-1 and adiponectin levels were decided in patients with hypertension. Besides, there are researches which report about association between low nesfatin-1 levels and increase in SBP and DBP [29]. In the Figen Kir Sahin research and coauthors it has been revealed that nesfatin-1 has strong correlation with SBP and DBP [30]. Though basic nesfatin-1 levels have anti-inflammatory action, its low level increases inflammation that can lead to development of hypertension. However, high nesfatin-1 levels can also give hypertension due to increase the inflammation and endothelial dysfunction [31, 32]. It is reported that nesfatin-1 plays a part in development of hypertension, especially in patients with obesity [33]. It is shown that nesfatin-1 owns hypertensive effect through its central interaction with oxytocyine receptors [34]. So, controversial data on a role occasion nesfatin-1 in development of hypertension are obtained today that demands carrying out the next researches in this direction.

Increase of nesfatin-1 level in patients with the combined current hypertension and obesity is established also in work the Vizir M.O. [35] that demonstrates involvement of this adipokine not only in pathogenesis AH, but also obesity. Data is shows also by other authors [36].

A prospective study will more accurately establish their roles in increasing the incidence of hypertension and obesity as well as cardiovascular risks.

Conclusion. The circulating level of resistin was increased in hypertensive subjects with obesity compared to those in subjects with normal body weight. The circulating levels of adiponectin, nesfatin-1 and irisin were increased in hypertensive subjects without obesity compared to those in obese subjects. Patients in the highest tertile of resistin were more likely to have obesity and subjects in the highest tertile of adiponectin and nesfatin-1 were more likely to have hypertension. Apelin-12 and obestatin levels in plasma did not differ according to the presence or absence of obesity.

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SUMMARY

ASSOCIATION OF CIRCULATING ADIPONECTIN, RESISTIN, IRISIN, NESFATIN-1, APELIN-12 AND OBESTATIN LEVELS WITH HYPERTENSION AND OBESITY

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Aim of study – examine the association between circulating blood adipokine levels (adiponectin, resistin, irisin, nesfatin-1, apelin-12 and obestatin) and hypertension and obesity.

The study included a comprehensive survey of 98 patients, including 52 subjects with hypertension and 46 with hypertension and obesity. The levels of adiponectin, resistin, irisin, nesfatin-1, apelin-12, obestatin has been determined.

On conducting an analysis of the study population, the circulating level of resistin (19.32±0.53 ng/mL vs. 14.90±0.29 ng/mL, p=0.0024) was higher in obese subjects with hypertension than in those without obesity, whereas apelin-12 (1.51±0.09 ng/mL vs. 1.42±0.04 ng/mL, p=0.069) and obestatin (2.97±0.04 ng/mL vs. 3.06±0.04 ng/mL, p=0.073) levels were not different between the two groups. The circulating levels of adiponectin (6.83±0.10 ng/mL vs. 2.54±0.72 ng/mL, p=0.00038), irisin (1.91±0.06 ng/mL vs. 1.19±0.03 ng/mL, p=0.021) and nesfatin-1 (8.07±0.06 ng/mL vs. 6.95±0.04 ng/mL, p=0.0057) were higher in subjects with hypertension than in those with obesity.

Patients in the highest tertile of resistin were more likely to have obesity and subjects in the highest tertile of adiponectin and nesfatin-1 were more likely to have hypertension. Apelin-12 and obestatin levels in plasma did not differ according to the presence or absence of obesity.

The fact that the level of resistin is highest in patients with hypertension and obesity in comparison with patients with hypertension without obesity, and the level of adipokines such as adiponectin, nesfatin-1 and irisin is higher in patients with hypertension without obesity in comparison with patients with hypertension and obesity may indicate a possible different pathogenetic role of the studied adipokines in the development of cardiovascular diseases. Since the cellular and molecular mechanisms of these changes are not definitively established and there are conflicting data in the literature, further research is needed to clarify the mechanisms of the pathogenetic role of the studied adipokines in the development of cardiovascular diseases.

Keywords: hypertension, obesity, adiponectin, resistin, irisin, nesfatin-1, apelin-12, obestatin.

РЕЗЮМЕ

АССОЦИАЦИЯ ЦИРКУЛИРУЮЩИХ УРОВНЕЙ АДИПОНЕКТИНА, РЕЗИСТИНА, ИРИСИНА, НЕСФАТИНА-1, АПЕЛИНА-12 И ОБЕСТАТИНА С АРТЕРИАЛЬНОЙ ГИПЕРТЕНЗИЕЙ И ОЖИРЕНИЕМ

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Цель исследования – определить связь между уровнем адипокинов в циркулирующей крови (адипонектин, резистин, ирисин, несфатин-1, апелин-12 и обестатин) с артериальной гипертензией и ожирением.

Проведено комплексное обследование 98 пациентов, из них 52 пациента с артериальной гипертензией и 46 пациентов с артериальной гипертензией и ожирением. Определены уровни адипонектина, резистина, ирисина, несфатина-1, апелина-12, обестатина.

Анализ исследуемой популяции выявил, что циркулирующий уровень резистина (19,32±0,53 нг/мл против 14,90±0,29 нг/мл, p=0,0024) был выше у субъектов с ожирением и артериальной гипертензией, чем у лиц без ожирения, тогда как апелин-12 (1,51±0,09 нг/мл против 1,42±0,04 нг/мл, p=0,069) и уровень обестатина (2,97±0,04 нг/мл против 3,06±0,04 нг/мл, p=0,073) не различались между двумя группами. Уровни циркулирующего адипонектина (6,83±0,10 нг/мл против 2,54±0,72 нг/мл, p=0,00038), ирисина (1,91±0,06 нг/мл против 1,19±0,03 нг/мл, p=0,021) и несфатин-1 (8,07±0,06 нг/мл против 6,95±0,04 нг/мл, p=0,0057) были выше у пациентов с артериальной гипертензией, чем у пациентов с коморбидным ожирением. Установленный факт о том, уровень резистина наибольший у пациентов с гипертензией и ожирением в сравнении с пациентами с гипертензией без ожирения, а уровень таких адипокинов, как адипонектин, несфатин-1 и ирисин выше у больных гипертонией без ожирения в сравнении с пациентами с гипертензией и ожирением, по всей вероятности, свидетельствует о различной патогенетической роли изученных адипокинов в развитии сердечно-сосудистых заболеваний. Поскольку клеточные и молекулярные механизмы этих изменений окончательно не установлены и в литературе имеются противоречивые данные, необходимо проведение дальнейших исследований по выяснению механизмов патогенетической роли исследуемых адипокинов в развитии сердечно-сосудистых заболеваний.

რეზიუმე

ადიპონექტინის, რეზისტინის, ირისინის, ნესფატინ-1-ის, აპელინი-12-ის და ობესტატინის მოცირკულირე დონეების ასოციაცია არტერიულ ჰიპერტენზიასა და სიმსუქნესთან

პ.კრავჩუკი, ო.კადიკოვა, ა.ნარიჟნაია, ა.ტაბაჩენკო, ა.საპარენკო

ხარკოვის ეროვნული სამედიცინო უნივერსიტეტი, უკრაინა

კვლევის მიზანს წარმოადგენდა კავშირის დადგენა სისხლში მოცირკულირე ადიპოკინების დონესა (ადიპონექტინი, რეზისტინი, ირისინი, ნესფა-

ტინ-1, აპელინი-12 და ობესტატინი) და არტერიულ ჰიპერტენზიასა და სიმსუქნეს შორის.

ჩატარებულია 98 პაციენტის კომპლექსური კვლევა, მათგან 52 – არტერიული ჰიპერტენზიით, 46 – არტერიული ჰიპერტენზიით და სიმსუქნით. განისაზღვრა ადიპონექტინის, რეზისტინის, ირისინის, ნესფატინ-1-ის, აპელინ-12-ის და ობესტატინის დონე.

გამოკვლეული პოპულაციის მონაცემების ანალიზით გამოვლინდა, რომ მოცირკულირე რეზისტინის დონე მეტია სუბიექტებში სიმსუქნით და არტერიული ჰიპერტენზიით, ვიდრე პირებში ჰიპერტენზიით სიმსუქნის გარეშე (19,32±0,53 ნგ/მლ *vs* 14,90±0,29 ნგ/მლ, p=0,0024); აპელინი-12 (1,51±0,09 ნგ/მლ *vs* 1,42±0,04 ნგ/მლ, p=0,069) და ობესტატინი (2,97±0,04 ნგ/მლ *vs* 3,06±0,04 ნგ/მლ, p=0,073) ამ ორ ჯგუფს შორის არ განსხვავდებოდა. მოცირკულირე ადიპონექტინის (6,83±0,10 ნგ/მლ *vs* 2,54±0,72 ნგ/მლ, p=0,00038), ირისინის (1,91±0,06 ნგ/მლ *vs* 1,19±0,03 ნგ/მლ, p=0,021) და ნესფატინ-1-ის (8,07±0,06 ნგ/მლ *vs* 6,95±0,04 ნგ/მლ, p=0,0057) დონე მეტი იყო პაციენტებში არტერიული ჰიპერტენზიით, ვიდრე პაციენტებში ჰიპერეტენზიით და კომორბიდული სიმსუქნით.

დადგენილია, რომ რეზისტინის დონე ყველაზე მაღალია პაციენტებში არტერიული ჰიპერტენზიით და სიმსუქნით შედარებით არტერიული ჰიპერტენზიით პაციენტებთან სიმსუქნის გარეშე; ადიპონექტინის, ირისინის და ნესფატინ-1-ის დონე კი უფრო მაღალია პაციენტებში არტერიული ჰიპერტენზიით სიმსუქნის გარეშე, რაც შესაძლოა მიუთითებს შესწავლილი ადიპოკინების განსხვავებულ პათოგენეზურ როლზე გულ-სისხლძარღვთა დაავადებების განვითარებაში. იმის გათვალისწინებით, რომ ამ ცვლილებების უჯრედული და მოლეკულური მექანიზმები საბოლოოდ დადგენილი არ არის და სამეცნიერო ლიტერატურაში ურთიერთსაწინააღმდეგო მონაცემებია, აუცილებელია შემდგომი კვლევების ჩატარება შესწავლილი ადიპოკინების პათოგენეზური როლის განსაზღვრისათვის გულ-სისხლძარღვთა დაავადებების განვითარებაში.

ВЛИЯНИЕ КОМПЛЕКСНОЙ УРАТСНИЖАЮЩЕЙ ТЕРАПИИ С ДОБАВЛЕНИЕМ СИНБИОТИКА НА ДИНАМИКУ КЛИНИКО-ЛАБОРАТОРНЫХ ПОКАЗАТЕЛЕЙ У БОЛЬНЫХ ХРОНИЧЕСКИМ ПОДАГРИЧЕСКИМ ПОЛИАРТРИТОМ

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Подагра – системное метаболическое заболевание, характеризуется развитием воспаления в местах отложения кристаллов моноурата натрия (МУН) у лиц с гиперурикемией (ГУ), что обусловлено факторами внешней среды и/или генетическими факторами [1].

В развитых странах подагрой страдает около 1-3% взрослого населения, а ГУ обнаруживают у 4-20%. В Украине распространенность заболевания составляет 5-28 случаев на 1000 мужчин и 1-6 случаев на 1000 женщин, а распространенность ГУ - 15-20%. Соотношение больных мужчин и женщин составляет 20:1 [2].

Подагра является большой социальной и экономической проблемой для общества, приводит к снижению и потере трудоспособности, ограничению профессиональной деятельности и существенно ухудшает качество жизни пациентов [4].

Гомеостаз обмена мочевой кислоты (МК) зависит от баланса между комплексом процессов секреции и экскреции почечными канальцами и ее выведением через желудочно-кишечный тракт (ЖКТ). МК синтезируется в печени. Около 65-75% ее выводится почками, а 25-35% - через ЖКТ [8,10,12,20]. Гиперурикемией (ГУ) считают уровень МК в сыворотке крови выше 6,4-6,8 мг/дл, когда растворимость моноурата натрия (МУН) in vitro ограничена [14].

В кишечнике происходит бактериальный уриколиз МК до аллантоина и углекислого газа [9,11,20]. Известно, что в толстой кишке некоторые бактерии используют МК как метаболический субстрат, в частности E.coli, лактобактерии и Pseudomonas способствуют расщеплению пуринов в аллантоин, аллантоиназу и мочевину, синтезируя энзим ксантиноксидазу [15].

Традиционная урикозурическая терапия (аллопуринол, фебуксостат) влияет только на почечный путь экскреции МК, а титрации в сторону повышения доз данных препаратов приводят к увеличению побочных реакций, чаще аллергических проявлений. Таким образом, поиск средств, влияющих на экстраренальный путь выведения уратов, по сей день является актуальным. К указанной группе препаратов относятся про- и пребиотики, которые путем воздействия на интенсивность бактериального уриколиза штаммами бактерий способны усиливать метаболизм МК в ЖКТ [3,6,7,21,22].

Пребиотики - это пищевые волокна, которые не перевариваются и избирательно стимулируют рост и активность некоторых групп бактерий и полезных метаболитов [12,15,16,20,21,22]. Составляющие пребиотиков могут улучшать функции иммунной системы, в частности влиять на цитокиновый профиль [14,17,24]. Известно, что инулин цикория может ингибировать активность ксантиноксидазы, снижая уровень урикемии [15]. Пребиотики улучшают барьерную функцию кишечника, снижают уровень патогенных субпопуляций бактерий (Clostridia spp.), способствуют росту симбиотической флоры (лакто- и бифидобактерии) [12,17-19].

Пробиотики - это штаммы живых микроорганизмов, в основном, лакто- и бифидобактерий. Согласно некоторым